FACT SHEET

WPED PRETREATMENT PERMIT REISSUANCE

APPLICANT	*ENTHONE INC.*
PERMIT NO.	*SP0001123*
APPLICATION NO.	*201301118*
DATE APPLICATION RECEIVED	*February 28, 2013*
FACILITY ID.	*156-025*
LOCATION ADDRESS	*350 Frontage Road, West Haven, CT 06516*
FACILITY CONTACT	*Robert Weber (203) 932-8627* *rweber@enthone.com*
MAILING ADDRESS	*350 Frontage Road, West Haven, CT 06516*
DMR CONTACT	*Robert Weber*
PERMIT TERM	*5 Years*
PERMIT CATEGORY	*PRETREATMENT SIGNIFICANT INDUSTRIAL USER (SIU)* *PRETREATMENT CATEGORICAL (CIU)*
SIC CODE(S)	*2899, 2819, 2869*
PERMIT TYPE	*Reissuance*
OWNERSHIP	*Private*
POTW THAT RECEIVES THE DISCHARGE	*Discharge to the City of West Haven Publicly Owned Treatment Works ("POTW")*
DEEP STAFF ENGINEER	*Ewa Wozniak*
TENTATIVE DECISION FACT SHEET DATE	*July 2, 2015* *When preparing a final version of this, change the language to DATE FACT SHEET PREPARED FOR PERMIT ISSUANCE*

SOLVENT MANAGEMENT PLAN (If applicable)

Is the facility operating under an approved solvent management plan (SMP)? Yes_X_ No__

If yes, indicate date issued: February 20, 2015

PERMIT FEES

***Application Filing Fee**: $1,300.00*

***Application Processing Fee**: $6,300.00*

Annual Fee:

DISCHARGE CODE	WASTEWATER CATEGORY (per 22a-430-7)	MAXIMUM GPD or CATEGORY	DSN	ANNUAL FEE (per 22a-430-7)
501035Y	*Metal Finishing*	10,0000	001	$4,337.50
TOTAL				$4,337.50

I. APPLICANT

ENTHONE INC. ("ENTHONE") in West Haven is seeking to renew its SPDES permit (Permit No. SP0001123, issued August 28, 2008) for authorization of the discharge of treated wastewater associated with its metal finishing operations. On February 28, 2013, the Department of Energy and Environmental Protection ("Department") received an application (Application No. 201301118) for the subject SPDES permit renewal. In a letter dated April 25, 2013, ENTHONE was informed that Application No. 201301118 was insufficient. Supplemental documentation from ENTHONE was received on July 24, 2013. On August 2, 2013, the application was determined to be administratively sufficient.

NATURE OF THE BUSINESS GENERATING THE DISCHARGE

ENTHONE is in the business of manufacturing proprietary chemicals for use in the metal finishing, printed circuit board and semi-conductor industries. Research and quality control operations also occur on-site.

The applicant seeks authorization for the following:

DSN	PROPOSED AVERAGE MONTHLY FLOW (gpd)	PROPOSED MAXIMUM DAILY FLOW (gpd)	PROPOSED WASTESTREAMS	TREATMENT TYPE	DISCHARGE TO
001	8,000	10,000	Treated wastewaters from the Technical Services Labs, Applications Lab and the EPOCH and SMT areas.	Equalization, pH adjustment, ion exchange	City of West Haven POTW

II. RECEIVING BODY INFORMATION

FOR SEWER DISCHARGES

Discharge to the City of West Haven POTW.

III. BACKGROUND/PERMIT HISTORY

Compliance/Enforcement

Is the Permittee subject to an ongoing enforcement action? ☐ Yes ☑ No
If yes, provide a brief explanation; include discussions of any issues relevant to the activities regulated under the permit.

Does the Permit contain a compliance schedule? ☐ Yes ☑ No

If yes, please check all that apply.

☐ Pollution Prevention ☐ Water Conservation ☐ Remediation

☐ Water Quality Requirement ☐ Treatment Requirement ☐ Other

Effluent Violations

MONTH/YEAR	DSN	PARAMETER	TYPE OF LIMIT	PERMITTED LIMIT	EXCEEDENCE
January 2010	001	Nickel, Total	Average Monthly Maximum, Daily	1.0 mg/L 2.0 mg/L	6.36 mg/L 25.0 mg/L
REASON: ☐ Equipment Related ☒ Operator Error ☐ Unknown ☐ None provided ☐ Other					
REASON: Operator did not perform the scheduled back flushing of the ion exchange unit, which caused residual metals captured within the column resin to be stripped and allowed to enter the discharge wastewater.					

MONTH/YEAR	DSN	PARAMETER	TYPE OF LIMIT	PERMITTED LIMIT	EXCEEDENCE
January 2010	001	Zinc, Total	Maximum, Daily	2.0 mg/L	2.8 mg/L
REASON: ☐ **Equipment Related** ☒ **Operator Error** ☐ **Unknown** ☐ **None provided** ☐ **Other**					
REASON: Operator did not perform the scheduled back flushing of the ion exchange unit, which caused residual metals captured within the column resin to be stripped and allowed to enter the discharge wastewater.					

MONTH/YEAR	DSN	PARAMETER	TYPE OF LIMIT	PERMITTED LIMIT	EXCEEDENCE
July 2011	001	pH	Minimum Instantaneous	6.0 S.U.	5.15 S.U.
REASON: ☒ **Equipment Related** ☐ **Operator Error** ☐ **Unknown** ☐ **None provided** ☐ **Other**					
REASON: The pH control system slightly overdosed the final mixing tank with excess acid.					

MONTH/YEAR	DSN	PARAMETER	TYPE OF LIMIT	PERMITTED LIMIT	EXCEEDENCE
October 2011	001	Nickel, Total	Average Monthly Maximum, Daily	1.0 mg/L 2.0 mg/L	2.98 mg/L 9.0 mg/L
REASON: ☐ **Equipment Related** ☐ **Operator Error** ☐ **Unknown** ☐ **None provided** ☒ **Other**					
REASON: Levels of nickel plating, within the Plating Shop, were higher than usual. The treatment system was unable to compensate for the increased concentration of nickel.					

MONTH/YEAR	DSN	PARAMETER	TYPE OF LIMIT	PERMITTED LIMIT	EXCEEDENCE
November 2011	001	Nickel, Total	Average Monthly Maximum, Daily	1.0 mg/L 2.0 mg/L	4.97 mg/L 17.0 mg/L
REASON: ☒ **Equipment Related** ☐ **Operator Error** ☐ **Unknown** ☐ **None provided** ☐ **Other**					
REASON: Ion exchange resin did not effectively remove nickel ions. The resin was replaced in December 2011.					

MONTH/YEAR	DSN	PARAMETER	TYPE OF LIMIT	PERMITTED LIMIT	EXCEEDENCE
April 2012	001	Nickel, Total	Average Monthly Maximum, Daily	1.0 mg/L 2.0 mg/L	1.14 mg/L 2.3 mg/L
REASON: ☐ **Equipment Related** ☐ **Operator Error** ☐ **Unknown** ☐ **None provided** ☒ **Other**					
REASON: Approximately 500 mL of nickel plating bath solution was disposed of in the wastewater treatment system, rather than drumming the solution for off-site disposal as protocol dictates.					

MONTH/YEAR	DSN	PARAMETER	TYPE OF LIMIT	PERMITTED LIMIT	EXCEEDENCE
May 2012	001	Silver, Total	Average Monthly Maximum, Daily	0.1 mg/L 0.43 mg/L	0.39 mg/L 1.05 mg/L
REASON: ☐ **Equipment Related** ☐ **Operator Error** ☐ **Unknown** ☐ **None provided** ☒ **Other**					
REASON: Approximately 85 mL of silver bearing rinsewater was discharged to the wastewater treatment system where insufficient removal of the metal occurred. The ion exchange resin being used did not efficiently remove silver.					

MONTH/YEAR	DSN	PARAMETER	TYPE OF LIMIT	PERMITTED LIMIT	EXCEEDENCE
November 2012	001	Nickel, Total	Average Monthly Maximum, Daily	1.0 mg/L 2.0 mg/L	1.36 mg/L 4.5 mg/L
REASON: ☐ **Equipment Related** ☐ **Operator Error** ☒ **Unknown** ☐ **None provided** ☐ **Other**					
REASON: Unknown.					

MONTH/YEAR	DSN	PARAMETER	TYPE OF LIMIT	PERMITTED LIMIT	EXCEEDENCE
August 2013	001	Total Suspended Solids	Average Monthly Maximum, Daily	30.0 mg/L 50.0 mg/L	40.0 mg/L 81.0 mg/L
REASON: ☐ **Equipment Related** ☐ **Operator Error** ☐ **Unknown** ☒ **None provided** ☐ **Other**					
REASON: Unknown.					

MONTH/YEAR	DSN	PARAMETER	TYPE OF LIMIT	PERMITTED LIMIT	EXCEEDENCE
October 2013	001	pH	Minimum Instantaneous Maximum Instantaneous	6.0 S.U. 10.0 S.U.	3.05 S.U. 10.4 S.U.
REASON: ☐ **Equipment Related** ☒ **Operator Error** ☐ **Unknown** ☐ **None provided** ☐ **Other**					
REASON: Operator error.					

MONTH/YEAR	DSN	PARAMETER	TYPE OF LIMIT	PERMITTED LIMIT	EXCEEDENCE
October 2013	001	Nickel, Total	Average Monthly Maximum, Daily	1.0 mg/L 2.0 mg/L	8.6 mg/L 19.0 mg/L
REASON: ☒ **Equipment Related** ☐ **Operator Error** ☐ **Unknown** ☐ **None provided** ☐ **Other**					
REASON: Depletion of the ion exchange resin.					

MONTH/YEAR	DSN	PARAMETER	TYPE OF LIMIT	PERMITTED LIMIT	EXCEEDENCE
October 2013	001	Zinc, Total	Average Monthly Maximum, Daily	1.0 mg/L 2.0 mg/L	2.55 mg/L 5.4 mg/L
REASON: ☒ **Equipment Related** ☐ **Operator Error** ☐ **Unknown** ☐ **None provided** ☐ **Other**					
REASON: Depletion of the ion exchange resin.					

MONTH/YEAR	DSN	PARAMETER	TYPE OF LIMIT	PERMITTED LIMIT	EXCEEDENCE
March 2014	001	Copper, Total	Average Monthly	1.0 mg/L	1.15 mg/L
REASON: ☐ **Equipment Related** ☐ **Operator Error** ☒ **Unknown** ☐ **None provided** ☐ **Other**					
REASON: Unknown					

Modifications

Within the last five years, have there been any permit modifications? ☐ Yes ☑ No
If yes, provide the date(s) of the modification(s) as well as a brief explanation of what was modified.

Other

N/A

IV. THE ON-SITE WASTEWATER SOURCES AND WASTEWATER TREATMENT SYSTEM

ENTHONE manufactures industrial chemicals for use in the metal finishing industry and printed circuit board manufacturing industry. The existing sources of wastewater at the facility can be broken down into four areas.

Specialty Chemical Production

Three chemical manufacturing areas generate a total of approximately 500 gallons of wastewater per day. These areas are the SCCu area, Activator area and Precious Metals area. Wastewaters from these areas are generated through washing of tanks, general wash downs of the production areas, rinsing of raw material containers and the changing of solutions in the pollution control equipment. This wastewater, along with the concentrated solutions, is collected in segregated containers and shipped to a licensed Treatment, Storage, and Disposal Facility ("TSDF").

Technical Service Department

The technical service department operates a pilot plating and metal finishing facility. Plating of parts is on a very small scale (tanks are approximately 25 gallons in volume), but encompasses a wide variety of finishes including immersion and electroless copper and/or nickel, acid and alkaline zinc, aluminum pretreatment, and hexavalent and/or trivalent chromium. Cyanide solution tanks are stagnant and are not plumbed to the wastewater treatment system. All wastewaters from cyanide and/or chromium solution tanks are containerized and disposed of offsite at a licensed TSDF.

On average, approximately 2,000 gallons of rinsewater is generated per day. Concentrated spent acids and plating solutions are pumped into drums and transported to the waste storage area in production for offsite disposal at a licensed TSDF.

All rinse tanks are fitted with flow control valves which are set at approximately one gallon per minute flow. Rinsewater is generated through rinsing of glassware discharged to the lab sinks, which are plumbed to the technical services outside sump ("TSOS"), which discharges to the wastewater treatment system.

Research and Quality Control Laboratories

Research and quality control laboratories are used for advanced electronics research and quality control. Normal lab rinsing, equipment wash downs and cleanups generate up to 400 gallons per day of rinse water. This rinsewater combines with the technical service department rinsewater in the TSOS, which discharges to the wastewater treatment system. All spent concentrated solutions used in these laboratories are collected in segregated containers which are then transported to the production waste storage area, logged in, labeled and ultimately shipped offsite at a licensed TSDF.

Alternative Final Finishes Area

This area is used to plate and test printed wiring boards using several pieces of equipment (an EPOCH conveyor for printed wiring board processing and an ESPEC temperature/humidity chamber). The rinsewaters associated with this area are generated by laboratory sinks used for cleaning laboratory glassware and are plumbed to a 350 gallon sump. From the sump, the rinsewaters are pumped to the wastewater treatment system. Concentrated solutions are collected in segregated containers and are shipped offsite at a licensed TSDF.

ON-SITE WASTEWATER TREATMENT SYSTEM

Laboratory wastewaters (from TSOS and EPOCH/OM sumps) are first collected in the primary pH adjustment tank (T-7001) and pH adjusted to between 1.0 and 1.5 S.U. to break any chelating bonds. The wastewater then overflows into the secondary pH adjustment tank (T-7002) and pH adjusted to between 3.5 and 5.0 S.U. to achieve the optimum pH range for the ion exchange resin. Wastewater then overflows into an ion exchange feed tank (T-7003) that feeds one of two pumps set to deliver 20-25 gallons per minute through the ion exchange resin beds. The wastewater is pumped through one of two bag filters (5µm) used to collect any solids. The wastewater then passes through a granular activated carbon bed ("GAC"), and then through two selective ion exchange ("SIX") beds, set up in series, to remove metal contaminants.

Following the SIX beds, the wastewater passes through a 10 µm bag filter. The treated wastewater is then pH adjusted to within permit limits in the final pH adjustment tank (T-7004) and discharged to the sanitary sewer. Flow, sampling and final pH are measured in a horizontal run of 4 inch diameter pipe between T-7004 and the connecting pipe to the sanitary sewer. An in-line, real-time trace metals analyzer is installed to measure copper, nickel, zinc and silver concentrations in T-7001 and T-7004, and configured with audible and visual alarms which trigger if permit limit exceedances are found.

V. SPILL HISTORY

There have been no spills at the facility within the last five years.

VI. EFFLUENT GUIDELINES

ENTHONE is in the business of manufacturing proprietary chemicals, both organic and inorganic, for use in the metal finishing, printed circuit board and semi-conductor industries. The existing sources of wastewater can be broken down into four (4) areas: specialty chemical production, technical service department, research and quality control laboratories and alternative final finishes area. Wastewaters directly related to chemical manufacturing and the alternative final finishes area are containerized and shipped off-site. Wastewaters associated with research and testing activities and custom plating areas are discharged to the on-site wastewater treatment system. These wastewaters are subject to effluent limitations set forth in section 22a-430-4(s)(2) of the Regulations of Connecticut State Agencies ("RCSA") and 40 CFR Part 433.15, Metal Finishing Point Source Category, Pretreatment Standards for Existing Sources ("PSES").

VII. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

	BASIS FOR LIMITS, STANDARDS OR CONDITIONS	REGULATION	DISCHARGE POINT(S)
☐	Federal Effluent Limitation Guideline (ELG)		
☒	Pretreatment Standards for Existing Sources (PSES)	40 CFR Part 433-Metal Finishing Point Source Category	DSN 001
☐	Pretreatment Standards for New Sources (PSNS)		
☐	Performance Standards		
☒	Section 22a-430-4(s) of the Regulations of Connecticut State Agencies		DSN 001
☒	Case-by-Case Determination using Best Professional Judgment (BPJ)		DSN 001
☐	Other (i.e. Department File Information, Treatability Manual, Federal Development Document)		

A. MONITORING PARAMETERS & LIMITS:

The discharge, DSN 001, is subject to the limits specified in section 22a-430-4(s) of the RCSA and the PSES in 40 CFR Part 433.15. Where more than one limit applied, the most stringent of the limits was selected as the permit limit and is highlighted in yellow in the table below.

DSN 001

PARAMETER	40 CFR 433.15		BPJ	RCSA 22a-430-4(s)(2)		
	Average Monthly (mg/L)	Maximum Daily (mg/L)	Instantaneous (mg/L)	Average Monthly (mg/L)	Maximum Daily (mg/L)	Instantaneous (mg/L)
Cadmium, Total	0.26	0.69		0.1[1]	0.5[1]	0.75[1]
Chromium, Total	1.71	2.77		1.0[1]	2.0[1]	3.0[1]
Chromium, Hexavalent				0.1[1]	0.2[1]	0.3[1]
Copper, Total	2.07	3.38		1.0[1]	2.0[1]	3.0[1]
Cyanide, Total	0.65	1.20	1.8	0.65	1.2	
Fluoride				20.0[1]	30.0[1]	45.0[1]
Iron, Total[2]						
Lead, Total	0.43	0.69		0.1[1]	0.5[1]	0.75[1]
Nickel, Total	2.38	3.98		1.0[1]	2.0[1]	3.0[1]
Oil Petroleum, Total Recoverable[1]						
Silver Total	0.24	0.43[1]	0.64	0.1[1]	0.5	0.75[1]
Suspended Solids, Total[1]						
Tin, Total				2.0[1]	4.0[1]	6.0[1]
Toxic Organics, Total ("TTO")			2.13[1]			
Zinc, Total	1.48	2.61		1.0[1]	2.0[1]	3.0[1]

Table Footnotes:
1 Limit retained from previous permit
2 No limits – monitoring only

Comments on specific parameters:

- The pH limits of 6.0 to 10.0 S.U. from the previous permit will be retained. These limits are considered to be protective of sanitary sewer systems.
- The TTO maximum daily limit of 2.13 mg/l, listed in 40 CFR Part 433.15 (PSES), was applied as the instantaneous maximum limit, based on BPJ.
- Quarterly monitoring for total cyanide is retained from the previous permit. All cyanide related solutions used onsite are containerized and shipped off-site. Monitoring for this parameter is based on a case-by-case determination using BPJ. The 2008 permit did not include limits for total cyanide. Average monthly and maximum daily limits have been included in this permit, in accordance with 40 CFR 433.15 and section 22a-430-4(s)(2) of the RCSA. The maximum instantaneous limit (1.5 x the maximum daily limit of 1.2 mg/l = 1.8 mg/l) is based on a case-by-case determination using BPJ.
- Monitoring for total iron is retained from the previous permit. Monitoring for this parameter is based on a case-by-case determination using BPJ. Even though section 22a-430-4(s) of the RCSA specifies average monthly and maximum daily limits for total iron, they are not applied during this permit reissuance as ENTHONE's historical effluent data indicates that the average monthly and maximum daily concentrations of total iron are much lower than the limits indicated in section 22a-430-4(s) of the RCSA.
- Limits for oil petroleum, total recoverable (average monthly limit – 50.0 mg/l; maximum daily limit – 100.0 mg/l; maximum instantaneous limit – 150.0 mg/l) and total suspended solids (average monthly limit – 30.0 mg/l; maximum daily limit – 50.0 mg/l; maximum instantaneous limit – 75.0 mg/l) are retained from the previous permit. Limits for these parameters are based on a case-by-case determination using BPJ.
- Limits for the following parameters are retained from the previous permit: total cadmium, total chromium, hexavalent chromium, total copper, total lead, total nickel, total silver, total tin and total zinc. Except for the maximum daily limit for total silver, these limits are based on section 22a-430-4(s) of the RCSA. The maximum daily limit for total silver is based on 40 CFR 433.15.

B. MONITORING FREQUENCY:

The *Monitoring Schedule* set forth in section 22a-430-3 of the RCSA prescribes a minimum frequency of monitoring, based on the category of the wastewater discharge and the permitted average daily flow (in gallons per day ("gpd")). Since ENTHONE's permitted average daily flow, for DSN 001, is 8,000 gpd and the wastewaters are generated from metal finishing operations, staff determined that the discharge falls in the "y" subcategory (5,000 – 10,000 gpd) of the "Metal Finishing" category of discharge. Therefore, the parameters that are expected to be found in ENTHONE's metal finishing wastewaters will be monitored twice per month. These parameters are: total copper, total iron, total nickel, total silver, total suspended solids, total tin and total zinc.

Monitoring for total chromium, total fluoride and oil petroleum, total recoverable is changed from weekly to monthly. ENTHONE's historical effluent data shows that the concentrations of these parameters in the effluent are much lower than the permitted limits.

Monitoring for hexavalent chromium, total cadmium and total lead is changed from weekly to quarterly. Hexavalent chromium and total cadmium are not expected to be present in ENTHONE's discharge. Further, ENTHONE's historical effluent data indicates that the total lead average monthly and maximum daily concentrations were 0.012 mg/l and 0.058 mg/l, respectively. These concentrations are much lower than the permitted limits. The Department decided to lower the monitoring frequency as hexavalent chromium, total lead and total cadmium are not pollutants of concern.

Monitoring for amenable cyanide, total selenium and volatile organics are removed during this permit reissuance. Both amenable cyanide and total selenium are believed absent in the effluent. Monitoring for volatile organics is being addressed by having ENTHONE monitor for TTOs. In addition, ENTHONE is currently operating under an approved Solvent Management Plan. Based on review of monitoring data, the concentrations of these three pollutants in the discharge have consistently been much lower than permitted limits.

VIII. MISCELLANEOUS

ENTHONE is subject to the terms and conditions of the following general permit:

- General Permit for the Discharge of Stormwater Associated with Industrial Activity (GSI000826)
- General Permit for the Discharge of Water Treatment Wastewater (GWT000005)

IX. SITE & RESOURCE INFORMATION

A. INDIAN LAND

Based on the information provided in the permit application, the site is not located on federally-recognized Indian land.

B. COASTAL BOUNDARY

The subject site is not located within the coastal boundary as delineated on Department approved coastal boundary maps.

C. ENDANGERED OR THREATENED SPECIES

The subject site is not located within an area identified as a habitat for endangered, threatened or special concern species as identified on the "State and Federal Listed Species and Natural Communities Map."

D. AQUIFER PROTECTION AREAS

The subject site is not located within a town that is required to establish Aquifer Protection Areas.

E. CONSERVATION OR PRESERVATION RESTRICTION

The property on which the subject site is located is not subject to a conservation or preservation restriction.

F. MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4)

The application does not include stormwater discharges to a MS4.

G. PUBLIC WATER SUPPLY WATERSHED

The subject site is not located within a public water supply watershed.

X. COMMENTS RELATED TO THE PUBLIC NOTICE

Notice of Tentative Decision was published in ____ on ____. The comment period ended on _____. The Department has received [no] [the following] written comments on the proposed action: Pick the one that applies.

Comments If Any

Water Permitting and Enforcement Division staff has reviewed the written comments and does not feel that the tentative decision should be modified. Provide Reasons

Water Permitting and Enforcement Division staff has reviewed the written comments and recommends the following changes in the [tentative decision] [draft permit]. Pick the one that applies.

(NOTE: Staff needs to ensure that the language in this section matches what is in the Final Determination Memo)

If there is a15 Day Notice – provide the date it was signed.